European Journal of Public Health, Vol. 36, No. 1, 177–182
© The Author(s) 2025. Published by Oxford University Press on behalf of the European Public Health Association.
This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial License (https://creativecommons.org/licenses/by-nc/4.0/), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited. For commercial re-use, please contact reprints@oup.com for reprints and translation rights for reprints. All other permissions can be obtained through our RightsLink service via the Permissions link on the article page on our site—for further information please contact journals.permissions@oup.com.
https://doi.org/10.1093/eurpub/ckaf221 Advance Access published on 3 December 2025

The novel use of endemic corridors for addictive behavior surveillance in Spain

Carla Guerra-Tort[1,2], Ana Teijeiro[1,*], María Isolina Santiago-Pérez[3], Guadalupe García[1,2], Lucía Martín-Gisbert[1], Cristina Candal-Pedreira[1,2], Julia Rey-Brandariz[1,2], Mónica Pérez-Ríos[1,2]

[1]Department of Preventive Medicine and Public Health, Universidade de Santiago de Compostela, Santiago de Compostela, Spain
[2]Health Research Institute of Santiago de Compostela (IDIS), Santiago de Compostela, Spain
[3]Health Information Service, Directorate-General of Public Health, Galician Regional Authority, Santiago de Compostela, Spain

*Corresponding author. Department of Preventive Medicine and Public Health, School of Medicine, Universidade de Santiago de Compostela, San Francisco s/n, 15782 Santiago de Compostela, Spain. E-mail: ana.teijeiro.teijeira@rai.usc.es.

Abstract

To describe the pattern of contacts with the healthcare system associated with drug use in Spain in the years 2022 and 2023. For the period 2016–23, data derived from a registry of activity in specialized care, included in the clinical-administrative database of Spanish hospitals (*Registro de Atención Especializada-Conjunto Mínimo Básico de Datos*), were extracted. Contacts with the healthcare system associated with alcohol, cannabis, cocaine, morphine derivatives, and sedative-hypnotics use were analyzed. The methodology of endemic corridors was applied for each drug category based on data from 2016–21. The series of contacts in 2022 and 2023 were then represented in the corridors to compare their expected and observed pattern. A total of 193 433 contacts associated with the use of alcohol (90 735), cannabis (39 730), cocaine (23 485), morphine derivatives (4888), and sedative-hypnotics (34 595) were analyzed for the period 2016–23. Of the contacts, 70.3% corresponded to men and 23.4% corresponded to people aged 45–54. The number of contacts increased for all categories of drugs in 2022 and 2023. This increase was reflected in the corridors, where contacts were mainly located in alert zones, and sometimes in epidemic zones. The results of this study show that endemic corridors allow the surveillance of the pattern of contacts with the healthcare system associated with drug use and, indirectly, of drug use itself. This methodology should be further studied as a complement in epidemiological surveillance of addictive behaviors at a population level.

Introduction

The monitoring of addictive behaviors associated with legal and illegal drug use is challenging for healthcare systems. These behaviors are not only a problem for the individual but also have social and economic repercussions with implications at the public health level. The dynamic nature of the drug market exceeds the capacity of traditional surveillance systems to rapidly detect emerging drugs or changes in the characteristics of drug users. Therefore, it is necessary to use all available indicators that allow for the consistent monitoring of different epidemiology aspects of drug use and their translation into rapid interventions. However, not all countries have sources of information or public health structures with the capacity to generate such indicators.

Traditionally, the surveillance of drug use is based on either population-based surveys [1, 2] or *ad hoc* surveys designed for specific groups [3]. Although surveys are a key source of information, the data are limited to the time when surveys are carried out, and publication of results occurs between one and two years after the information is collected. Moreover, periodicity and consistency in the way the information is collected can be highly variable [4]. In addition to surveys, other surveillance systems designed to monitor drug use are based on information provided by health professionals, sometimes under the umbrella of a surveillance network [5]. However, there is not a single model for these surveillance networks nor a list of components that should be included. These surveillance networks are context dependent, since they adapt to a target population, geographic location, and available data sources and resources [6, 7]. When available, data derived from contacts with the healthcare system can also be useful for monitoring drug use, permitting the estimation of the burden of disease associated with such use [8, 9]. Surveillance of these contacts allows the tracking of the impact of drug use in a population, and indirectly the identification of changes in use and possible situations of epidemiological alert.

In the context of communicable diseases, the application of endemic corridors allows the representation of the current incidence over the historical incidence, based on a central measure and a fluctuation path [10, 11]. The objective of endemic corridors is to compare the evolution of the number of cases observed in a given period with what would be expected, on average, based on the previous five to seven years, with an upper and lower limit [10, 11].

The aim of this study is to describe the pattern of contacts with the healthcare system associated with the use of various drugs in Spain in 2022 and 2023 applying the endemic corridors methodology.

Methods

Data source

The data analyzed are derived from the registry of activity in specialized care (*Registro de Atención Especializada*—RAE), which has been part of the clinical-administrative database of the Spanish

Downloaded from https://academic.oup.com/eurpub/article/36/1/177/8363950 by guest on 11 March 2026

hospitals (*Conjunto Mínimo Básico de Datos*—CMBD) since 2016. In the RAE-CMBD, each record is completed at patient discharge based on the clinical report and the information already included in the hospital database. The registry includes information of discharges occurring in hospitals, outpatient services in hospitals, home care, specialized high complexity units (which include specialties such as neurosurgery, vascular surgery or pneumology, among others), and emergency department units, in both the public and private sectors [12, 13]. For each discharge, sociodemographic data, such as sex and age, and clinical data, such as diagnosis and procedures, are collected.

Data from the RAE-CMBD were extracted for the period 2016–23. Records with diagnostic codes related to alcohol, cannabis, cocaine, hallucinogens, volatile solvents, heroin, methadone, other opioids, synthetic narcotics, lysergide (LSD), barbiturates, and benzodiazepines were eligible. Diagnostic codes related to the drugs mentioned above, under the International Classification of Diseases, 10th revision, Spanish version (ICD-10 ES), can be consulted in Table 1. To be included in this analysis, these diagnostic codes must had been listed as the primary diagnosis or in first position in the secondary diagnosis (henceforth, secondary diagnosis), since in these cases drug use was considered the reason for the contact with the healthcare system. Records derived from scheduled contacts and records associated with infra-dosing were excluded. The latter refers to an incorrect use of a prescribed drug, and corresponds to the eligible ICD-10 ES codes that begin with T40 or T42 and include the digit 6 in the fifth or sixth position (e.g. T42.4X6, referring to benzodiazepine infra-dosing).

Variables

Contacts related to drug use were assessed at the population level. A contact was defined as any interaction between an individual and the healthcare system associated with the diagnostic codes related in this analysis to drug use, irrespective of hospital admission. In the RAE-CMBD, each of these contacts generates a record.

For each contact, information was obtained about sex, age (categorized into 0–14, 15–24, 25–34, 35–44, 45–54, 55–64, and 65 years and over), date of contact initiation, date of discharge, reason for discharge, and in-hospital mortality.

Table 1. ICD-10 ES diagnostic codes

Code	Description
F10.1	Mental and behavioral disorders due to use of alcohol, harmful use
F10.2	Mental and behavioral disorders due to use of alcohol, dependence syndrome
F10.9	Unspecified mental and behavioral disorder due to use of alcohol
F12	Mental and behavioral disorders due to use of cannabinoids
F14	Mental and behavioral disorders due to use of cocaine
F15	Mental and behavioral disorders due to use of other stimulants
F16	Mental and behavioral disorders due to use of hallucinogens
F18	Mental and behavioral disorders due to use of volatile solvents
T40.0	Poisoning by opium
T40.1	Poisoning by heroin
T40.3	Poisoning by methadone
T40.4	Poisoning by other synthetic narcotics
T40.5	Poisoning by cocaine
T40.7	Poisoning by cannabis (derivatives)
T40.8	Poisoning by LSD
T40.9	Poisoning by other and unspecified psychodysleptics [hallucinogens]
T42.3	Poisoning by barbiturates
T42.4	Poisoning by benzodiazepines

The present analysis was based on the date of the initiation of the contact and not on the date of discharge. Since contacts initiated in December 2023 and discharged in 2024 are not included in the RAE-CMBD 2023 database, the corresponding records of December 2023 were excluded.

Records were grouped by drug involved. Thus, records were classified as contacts associated with use of alcohol (F10.1, F10.2, F10.9), cannabis (F12, T40.7), cocaine (F14, T40.4), morphine derivatives (T40.0, T40.1, T40.3, T40.5)—including heroin, methadone, synthetic narcotics and opium—and sedative-hypnotics (T42.3, T42.4)—including barbiturates and benzodiazepines. Records associated with hallucinogens, LSD, volatile solvents, and other stimulants were not included in the analysis due to the low number of contacts registered during the period under study.

Duplicate records were excluded. In addition, to avoid the repetition of records associated with the same episode of drug use, consecutive records for the same individual that were ≤72 h apart were also excluded.

Statistical analysis

Design of endemic corridors for addictive behavior surveillance

The methodology of endemic corridors was applied to assess the pattern of the absolute number of contacts associated with drug use. Endemic corridors are commonly applied to identify different phases in the evolution of an epidemic, taking into account its historical series of cases. These phases vary from a successful situation to an epidemic situation [10].

In the context of this analysis, the application of endemic corridor methodology leads to the graphic representation of the monthly series of observed contacts associated with drug use and its expected number (2022 and 2023), along with their 95% confidence interval (95%CI), based on a period taken as reference (2016–21). This representation works as a corridor, and it is divided into four zones that permit the description of the evolution of the observed series of contacts. Thus, when the number of contacts exceed the upper limit of the 95%CI of the corridor, they enter the epidemic zone; when the contacts are between the upper limit and the average of the corridor, they are in the alert zone; if contacts are between the average and the lower limit of the corridor, they are in the safety zone; and when contacts fall below the lower limit of the corridor, success is achieved (Fig. 1).

For each category of drug, a corridor was independently designed by applying means and rates [14]. The first step was to establish the 6-year period 2016–21 as the reference period. Second, the geometric mean and its 95%CI were calculated for the number of contacts in each month of the year, thus obtaining a monthly mean for each of the five drug categories in the 6-year reference period. Third, the number of expected monthly contacts in 2022 and 2023 were estimated by multiplying the geometric means and their 95%CI by the reference population. Finally, the number of expected monthly contacts was compared with the number of observed monthly contacts by means of the graphical representation of the corridors.

Data analysis and graphic representations were performed in Stata v17 [15].

Results

The RAE-CMBD included 282 323 records associated with the use of alcohol, cannabis, cocaine, morphine derivatives, and sedative-hypnotics as primary or secondary diagnosis for the period 2016–23 (except December 2023). Infra-dosing codes were identified as primary or secondary diagnosis in 249 records, mostly associated with benzodiazepine use. Of the records, 227 693 were associated with unscheduled contacts (80.6%). A total of 193 433 records remained after exclusion of duplicates ($n = 487$), exclusion of records referring to the same drug use episode ($n = 21\ 332$), and exclusion of records

Downloaded from https://academic.oup.com/eurpub/article/36/1/177/8363950 by guest on 11 March 2026

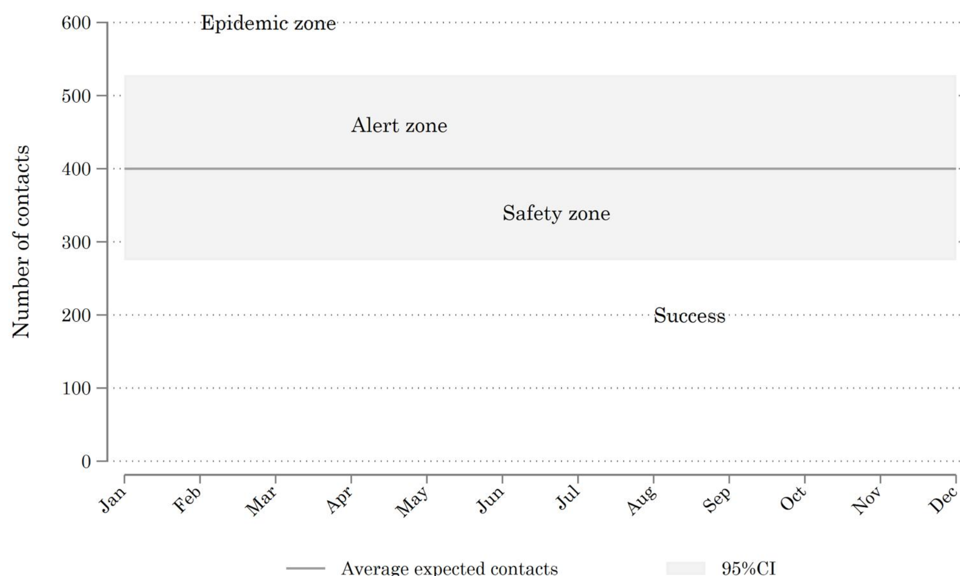

Figure 1. Description of the four zones related to the evolution of the average expected contacts: epidemic, alert, safety, and success.

with missing data for identification, sex or age ($n = 12\ 441$) (Supplementary Fig. S1).

Of the contacts, 70.3% corresponded to men ($n = 136\ 051$) and 23.4% corresponded to people aged 45–54 ($n = 45\ 220$). Drugs associated with a greater number of contacts were alcohol (90 735—46.9%) and cannabis (39 730—20.5%). In the morphine derivatives category (4888–2.5%), synthetic narcotics were associated with the highest number of contacts (3335—68.2% in the morphine derivatives category). In the case of the sedative-hypnotics (34 595–17.9%), benzodiazepines were associated with the highest number of contacts (34 215—98.9% in the sedative-hypnotics category) (Table 2).

The most frequent destination of discharges was the patient's home (85.1%), and the percentage of discharges due to death was 1.4% (mostly associated with sedative-hypnotics use). Morphine derivatives were the category of drugs with the highest percentage of discharges due to death (3.7%).

Between 2016 and 2023, the absolute number of contacts increased more in women than in men for all drug categories except morphine derivatives (Supplementary Table S1 and Figs S2–S6). Notably, the male-to-female contact ratio narrowed for cocaine (from 3.8:1 to 3.1:1) and cannabis use (from 3.7:1 to 3.4:1) over the period.

The series of observed contacts in 2022 and 2023 were similar for all categories of drugs with the exception of cocaine, for which contacts in 2023 exceeded contacts in 2022. Contacts associated with alcohol and cocaine increased from the beginning of the year through July–August in both 2022 and 2023. For cannabis and sedative-hypnotics, the number of contacts remained stable over the two years, while for morphine derivatives an irregular pattern is observed. For the five categories, the number of contacts observed in 2022 and 2023 was higher than the expected number of contacts in all months analyzed (Fig. 2).

Contacts associated with alcohol use in 2022 and 2023 exceeded 1000 per month and were mostly located in the alert zone of the corridor. Exceptions were February, May and August of both years, when contacts reached the epidemic level.

The corridor placed contacts associated with cannabis use in the epidemic zone in 11 of the 23 months analyzed, mainly in 2023. At the beginning and at the end of both 2022 and 2023, contacts were in the safety or alert zone. The number of contacts per month varied between 400 and 500.

Contacts associated with cocaine in 2023 exceeded the 2022 series in all months analyzed, remaining in the epidemic zone of the corridor. The number of contacts ranged from 250 to 450.

For morphine derivatives, the series of contacts show an irregular pattern, reaching the epidemic zone in different months. Increases in the number of contacts were observed in February, May, August and October 2022. In 2023, the epidemic situation occurred one month earlier than in 2022. The number of contacts ranged from 50 to 80.

The corridor placed sedative-hypnotic contacts in the epidemic zone in all months analyzed in both 2022 and 2023, except for November 2023 where contacts remained in the alert zone. In both years, the number of contacts per month was between 400 and 550.

Discussion

Contacts associated with alcohol, cannabis, cocaine, morphine derivatives, and sedative-hypnotics increased in 2022 and 2023 relative to the 2016–21 period. The analysis of monthly contacts associated with drug use applying endemic corridors concludes that the situation in 2022 and 2023 was mostly of alert, occasionally reaching epidemic levels.

Data derived from contacts with the healthcare system have been demonstrated to be an important source of information in the surveillance of addictive behaviors, such as drug use [16], specially, in the context of drugs with a high prevalence of use at the population level. In this context, this data has allowed the detection of changes in patterns of contacts, that reflect changes in patterns of drug use [4]. This data provides basic sociodemographic information and allows the characterization of addictive behaviors in terms of morbidity [5], although it has limitations. People who contact the healthcare system due to drug use represent only a part of the total drug-using population. Moreover, the information collected does not allow for a detailed characterization of the profile of drug users. Therefore, the analysis of contacts should be understood as a complementary indicator in drug use surveillance.

The use of endemic corridors in the field of addictions, to our knowledge, has not been considered previously. This methodology is frequently used in the study of the evolution of communicable diseases, such as influenza [17]. In this study, the endemic corridor methodology has been applied to characterize the pattern of contacts with the healthcare system associated with drug use. The results suggest that endemic corridors could be a useful complement in the surveillance of addictive behaviors. The corridors designed in this study allow for a comparison of monthly contacts in a given year with the "true average" of monthly contacts in a previous

Downloaded from https://academic.oup.com/eurpub/article/36/1/177/8363950 by guest on 11 March 2026

Table 2. Contacts associated with drug use, by sex and age group, for the period 2016–23

Drug category	Overall	Sex		Age group						
		Men	Women	0–14 years	15–24 years	25–34 years	35–44 years	45–54 years	55–64 years	65 years and over
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Alcohol	90 735 (46.9)	71 770 (52.8)	18 965 (33.1)	490 (14.2)	2589 (12.9)	6393 (22.7)	16 489 (41.9)	26 760 (59.2)	21 564 (71.7)	16 450 (60.8)
Cannabis	39 730 (20.5)	30 629 (22.5)	9101 (15.9)	900 (26.1)	11 926 (59.3)	12 880 (45.7)	8240 (21.0)	4273 (9.4)	1345 (4.5)	166 (0.6)
Cocaine	23 485 (12.1)	18 197 (13.4)	5288 (9.2)	181 (5.2)	1636 (8.1)	5577 (19.8)	8673 (22.1)	5755 (12.7)	1521 (5.1)	142 (0.5)
Morphine derivatives	4888 (2.5)	2372 (1.7)	2516 (4.4)	74 (2.1)	96 (0.5)	203 (0.7)	462 (1.2)	801 (1.8)	539 (81.8)	2713 (10.0)
Sedative-hypnotics	34 595 (17.9)	13 083 (9.6)	21 512 (37.5)	1809 (52.4)	3851 (19.2)	3156 (11.2)	5462 (13.9)	7631 (16.9)	5119 (16.9)	7567 (28.0)
Overall	**193 433 100.0%**	**136 051 70.3%**	**57 382 29.7%**	**3454 1.8%**	**20 098 10.4%**	**28 209 14.6%**	**39 326 20.3%**	**45 220 23.4%**	**30 088 15.6%**	**27 038 14.0%**

Bold values represent the total number of contacts associated with alcohol, cannabis, cocaine, morphine derivatives and sedative-hypnotics use and its porcentage by sex and age group.

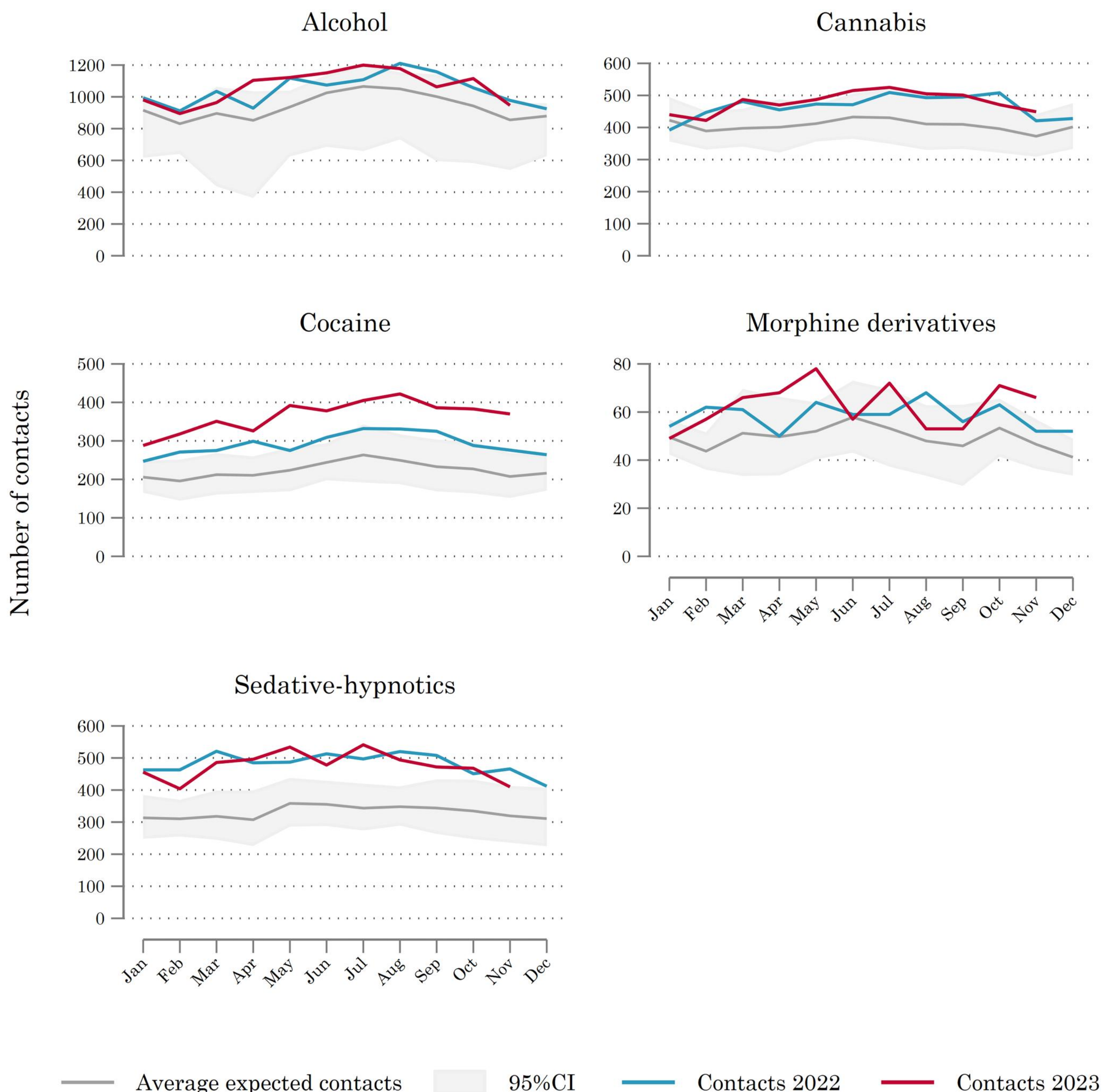

Figure 2. Endemic corridors applied to contacts with the healthcare system by month and drug category for 2022 and 2023.

Downloaded from https://academic.oup.com/eurpub/article/36/1/177/8363950 by guest on 11 March 2026

period taken as reference. The application of endemic corridors to contacts associated with drug use is of interest not only to describe their pattern, but also to define levels of risk associated with drug use.

The RAE-CMBD information comes from both scheduled and unscheduled contacts. In the case of the monitoring of addictive behaviors, scheduled contacts are usually associated with follow-up treatment. For this reason, we have exclusively analyzed unscheduled contacts.

From the results obtained, the pattern of contacts associated with the use of sedative-hypnotics, cocaine and morphine derivatives is of special concern, although the pattern associated with the use of alcohol and cannabis should not be underestimated.

Alcohol and sedative-hypnotics are the drugs associated with the highest number of contacts and are also the drugs, apart from tobacco, with the highest prevalence of use in both young and adult populations in Spain. Alcohol is a socially accepted drug in Spain and its consumption is an important public health issue. This fact translates not only into a prevalence of experimentation (lifetime use) of more than 90% and a prevalence of monthly use close to 65% [18], but also into a high number of contacts with the healthcare system. The pattern of contacts associated with alcohol use remains in the alert zone of the corridor, although, as in other studies, higher levels of use are observed in the summer months [19].

Regarding the sedative-hypnotics category, the results presented here complement information from a recent study. This study concluded that in Spain, between 2005 and 2022, the prevalence of sedative-hypnotic use increased annually by 6%, reaching 9.7% in 2022 among the population aged 15–64 [20]. This prevalence, higher in women and among those aged 45–64, parallels to the profile of contacts. It should be noted that the reference period used for the design of the corridors is 2016–21. The prevalence of use of sedative-hypnotics in this period, derived from the survey on alcohol and drug use in Spain (*Encuesta sobre sobre alcohol y otras drogas en España*), doubled that observed in 2005–09. If the prevalence of use is related to the number of contacts, which is plausible, designing the corridor with data prior to 2016, when the prevalence of use was lower, would have generated a corridor with lower thresholds. Consequently, in this scenario, the results for contacts associated with sedative-hypnotic use in 2022 and 2023 would be even more unfavorable.

Although cocaine use in the last 12 months and in the last 30 days has remained stable in Spain since 1995, with prevalence below 3%, cocaine is one of the drugs associated with the highest number of contacts, between 250 and 450 per month. Regarding lifetime use, prevalence has increased in Spain since 2005, reaching a peak in 2024 (13.3%) [18]. This increase in the prevalence of cocaine use could be associated with the number of contacts, which in 2023 were in the epidemic zone of the corridor. As with alcohol, cocaine use increases in the summer months [19]. This is also observed in the corridor, with the number of contacts reaching peak values in July and August.

The category of morphine derivatives includes drugs such as heroin and opioid analgesics. In Spain, the prevalence of heroin use in the last year is close to 0.1%, and the prevalence of lifetime use is less than 1%. In the case of opioid analgesics, these prevalences are estimated at 6.6% and 15.2%, respectively [18]. Contacts associated with the use of morphine derivatives are infrequent, and this is reflected in the great variability of the corridor, although they are the drug category with the highest number of discharges due to death.

In Spain, the prevalence of cannabis use has increased since 2013, reaching a peak in 2024 with a lifetime prevalence of use of 43.7%. Cannabis is the illegal drug with the highest prevalence of use, and this prevalence is higher in young men (15–34 years), consistent with the profile of contacts. The prevalence of problematic cannabis use among the Spanish population aged 15–64 was 1.4% in 2024, and although this pattern is less prevalent in women, the male-to-female prevalence ratio has decreased from 1.9 in 2013–1.3 in 2024 [18]. The increase in prevalence and the increase in use by women is reflected in the number of contacts, which have also increased in comparison to previous studies. Thus, in 2023 contacts associated with cannabis use were mostly located in alert or epidemic zones of the corridor.

As with other methods of monitoring addictions, working with endemic corridors applied to data derived from health statistics has its limitations and strengths, both associated with the data source and the method of analysis. The main limitation related to the RAE-CMBD is that the clinical data is not collected specifically to meet the objective of this study. In addition, not all contacts occurring in the period analyzed are available. Although the RAE-CMBD is representative, some discharges might not be collected or completely coded. Regarding the endemic corridor methodology, it is typical to use a reference period of five to seven years. The choice of years used for the corridor design could affect the results. The 6-year period used in this study was conditioned by the fact that 2016 was the first year for which data for the most recent version of the RAE-CMBD were available. Furthermore, to avoid the repetition of records associated with the same drug use episode, consecutive records for the same individual that were ≤72 h apart were excluded. This threshold has been used in other studies [21], but could also affect the results obtained.

This study covers the period of the COVID-19 pandemic, during which a prolonged national home confinement was implemented in Spain (March–June 2020). During this time, contacts with the healthcare system unrelated to COVID-19 decreased markedly, likely due to the overload of the healthcare system and the prioritization of COVID-19 care. This reduction may have affected the estimation of expected contacts associated with drug use for the years 2022 and 2023, potentially leading to an underestimation. Nevertheless, the use of the geometric mean and its 95%CI may have mitigated the influence of these anomalies, suggesting a low to moderate impact on the overall estimates.

The main strength associated with the RAE-CMBD registry is that the diagnosis codes included in this analysis provide a holistic view of the different profiles associated with the use of drugs such as alcohol, cannabis, cocaine, morphine derivatives, and sedative-hypnotics. Thus, codes associated with chronic drug use, such as alcohol dependence, are included, which act as indirect indicators of use. Codes associated with acute abuse, such as opiated poisoning, are also included. In this analysis, the infra-dosing codes have not been considered since they refer to an incorrect use of a prescribed drug. The impact of this exclusion on the results is deemed to be low. Another strength associated with the data source is that the information included in the RAE-CMBD is collected in a systematic and sustained manner. This characteristic brings consistency to the data, making it appropriate for the application of endemic corridor methodology.

In relation to the design of the corridor, the use of confidence intervals should be considered a strength, as it makes it possible to categorize the number of contacts associated with drug use and to identify changes in their pattern. Working with confidence intervals lowers the effect of subjectivity on the interpretation of the results.

The application of the endemic corridor methodology to contacts with the healthcare system associated with drug use seems promising, since it permits the surveillance of their pattern and indirectly of drug use. Because the RAE-CMBD data are collected systematically, this novel use of endemic corridors could be a valuable tool in the development of interventions aimed at specific drugs or specific population groups. The application of endemic corridors for the surveillance of addictive behaviors should be further studied in order to improve the management of the data and to develop protocols.

Downloaded from https://academic.oup.com/eurpub/article/36/1/177/8363950 by guest on 11 March 2026

Supplementary data

Supplementary data are available at *EURPUB* online.

Conflicts of interest: None declared.

Funding

The present work has been supported by the National Plan on Drugs (grant number 2022I006).

Data availability

The data analyzed in this study are available upon request from the RAE-CMBD.

Key points

- Endemic corridors applied to contacts with the healthcare system associated with drug use permit the surveillance of the pattern of contacts and indirectly of drug use.
- The number of contacts increased for all categories of drugs analyzed in 2022 and 2023.
- The situation in 2022 and 2023 was, in most months, of alert, occasionally reaching epidemic levels.
- The endemic corridor methodology could be useful in the development of interventions aimed at specific drugs and population groups.

References

1 *Global Drug Survey*. 2024. https://www.globaldrugsurvey.com/ (19 November 2024, date last accessed)

2 European Union Drugs Agency (EUDA). *European Web Survey on Drugs*. 2024. https://www.euda.europa.eu/topics/european-web-survey-on-drugs_en (16 October 2024, date last accessed).

3 Alias-Ferri M, Marchei E, Pacifici R *et al.* New synthetic opioids use among patients in treatment for an opioid use disorder in barcelona. *Eur Addict Res* 2022; **28**:323–30.

4 Dunn M, Bruno R, Burns L *et al.* Effectiveness of and challenges faced by surveillance systems. *Drug Test Anal* 2011;**3**:635–41.

5 Dines AM, Wood DM, Galicia M *et al.* Presentations to the emergency department following cannabis use—a multi-centre case series from ten European countries. *J Med Toxicol* 2015;**11**:415–21.

6 Substance Abuse and Mental Health Servicies Administration (SAMHSA). *Drug Abuse Warning Network (DAWN)*. 2024. https://www.samhsa.gov/data/data-we-collect/dawn-drug-abuse-warning-network (19 November 2024, date last accessed)

7 South African Medical Research Council (SAMRC). *South African Community Epidemiology Network on Use (SACENDU)*. 2024. https://www.samrc.ac.za/intramural-research-units/MASTRU-sacendu (19 November 2024, date last accessed).

8 Eiden C, Roy S, Malafaye N *et al.* Ten-year trends in hospitalizations related to cocaine abuse in France. *Fundam Clin Pharmacol* 2022;**36**:1128–32.

9 Jouanjus E, Leymarie F, Tubery M *et al.* Cannabis-related hospitalizations: unexpected serious events identified through hospital databases. *Br J Clin Pharmacol* 2011;**71**:758–65.

10 Becerra G. Corredores endémicos con media geométrica y su intervalo de confianza: una nueva y eficiente alternativa Para la vigilancia. *RTV* 2000; **5**:1028–4338.

11 Rial MJ, Alcorcón N, Ferrario C *et al.* Corredores endémicos: una herramienta útil para la vigilancia epidemiológica de la influenza. *Rev Argent Microbiol* 2008; **40**:37–40.

12 Ministerio de Sanidad. *Registro de Actividad de Atención Especializada (RAE-CMBD)*. 2016. https://www.sanidad.gob.es/estadEstudios/estadisticas/cmbdhome.htm (31 October 2024, date last accessed).

13 Real Decreto 69/2015, de 6 de febrero, por el que se regula el Registro de Actividad de Atención Sanitaria Especializada. Boletín Oficial del Estado, 35, de 10 de febrero de 2015.

14 Bortman M. Elaboración de corredores o canales endémicos mediante planillas de cálculo. *Rev Panam Salud Publica* 1999;**5**:1–8.

15 StataCorp. *Stata Statistical Software: Release 17*. College Station, TX: StataCorp LLC, 2023.

16 Daveluy A, Miremont-Salame G, Kostrzewa A *et al.* Identification of abuse and dependence cases through a hospital database. *Pharmacoepidemiol Drug Saf* 2012; **21**:1344–9.

17 Ibrahim-Achi D, Miró O, Galicia M *et al.* Red de Estudio de Drogas en Urgencias Hospitalarias en España (Registro REDUrHE): análisis general y comparación según asistencia en día laborable o festivo. *Emergencias* 2021;**33**:335–44.

18 Observatorio Español de las Drogas y las Adicciones. Ministerio de Sanidad. Delegación del Gobierno para el Plan Nacional sobre Drogas. Encuesta sobre alcohol y otras drogas en España, (EDADES). 2024. https://pnsd.sanidad.gob.es/profesionales/sistemasInformacion/sistemaInformacion/encuestas_EDADES.htm (12 December 2024, date last accessed).

19 Palamar JJ, Rutherford C, Keyes KM. Summer as a risk factor for drug initiation. *J Gen Intern Med* 2020;**35**:947–9.

20 Mourino N, Teijeiro A, Guerra-Tort C *et al.* Consumption of hypnosedatives in Spain: characterization and time trends, 2005-2022. *Gac Sanit* 2024;**38**:102433.

21 Suen LW, Davy-Mendez T, LeSaint KT *et al.* Emergency department visits and trends related to cocaine, psychostimulants, and opioids in the United States, 2008–2018. *BMC Emerg Med* 2022;**22**:19.

© The Author(s) 2025. Published by Oxford University Press on behalf of the European Public Health Association.
This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial License (https://creativecommons.org/licenses/by-nc/4.0/), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited. For commercial re-use, please contact reprints@oup.com for reprints and translation rights for reprints. All other permissions can be obtained through our RightsLink service via the Permissions link on the article page on our site—for further information please contact journals.permissions@oup.com.
European Journal of Public Health, 2026, 36, 177–182
https://doi.org/10.1093/eurpub/ckaf221
Original Manuscript

Downloaded from https://academic.oup.com/eurpub/article/36/1/177/8363950 by guest on 11 March 2026